Panasonic

ideas for life

PT-**LB20** Series

Micro Portable XGA/SVGA LCD Projectors

PT-**LB20NT**EA	2000 lm	XGA
PT-**LB20**EA	2000 lm	XGA
PT-**LB20S**EA	2000 lm	SVGA
PT-**LB20V**EA	1600 lm	XGA

Daylight View

Presentations in Light

- **Daylight View technology**
  - Image performance rivalling 3,000-lumen projectors*1*2
  - Vivid colours in a bright room
  - Auto operation with ambient light sensor
- **Easy wireless projection** (PT-LB20NTEA)
  - Wireless PC motion/sound streaming*3
  - High-speed data transfer
  - Flexible 16-window index style
  - Simple, user-friendly settings
- **Quick operation**
  - 2-second speed start
  - One-touch auto setup with digital keystone correction
  - Direct power off
- **Portability**
  - Compact notebook-size body
  - Ultra-lightweight: 2.1 kg (4.6 lbs)*4

*1 In comparison with our product
*2 The PT-LB20VEA rivals 2,400-lumen projectors in image performance.
*3 Supports ASF, WMV, AVI, MPEG4 and MPEG1/2 movie formats.
*4 PT-LB20NTEA: 2.2 kg (4.9 lbs)

Daylight View Technology

Many people want to use special colours and designs in their presentations, but these colours change when they're projected onto the screen in a lighted room. So they just use plain, basic colours. As a result, the presentation is visually boring and looks just like their competitor's.

Panasonic solves this problem with our PT-LB20 Series projectors featuring innovative Daylight View technology. These projectors greatly improve image performance in brightly lit places. In fact, the 2,000-lumen brightness of the PT-LB20 Series achieves a level of image performance that equals many 3,000-lumen projectors.*1*2

Starting with the wireless motion and sound streaming capability of the PT-LB20NTEA, the anasonic PT-LB20 Series projectors pack an array of powerful functions into a compact, lightweight body. Select the one that best matches your presentation needs.

Image Performance Rivalling 3,000-Lumen Projectors

Daylight View technology significantly improves image performance. Our new 2,000-lumen projectors have attained a level of image performance that equals or exceeds that of our previous 3,000-lumen models in brightly lit environments.*3

Vivid Colours in a Bright Room

Panasonic's unique Daylight View technology greatly improves colour perception in bright rooms. Pale colours are divided into six basic colour components (red, green, blue, yellow, cyan and magenta) for more precise control. Daylight View achieves a superb level of image performance that produces less of a difference between PC display images and projected images.

Auto Operation with Ambient Light Sensor

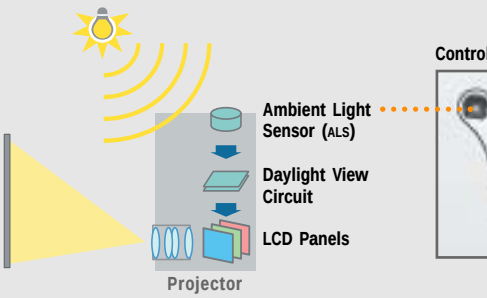
The top panel of the unit is equipped with an ambient light sensor (ALS). The ALS detects changes in the ambient light intensity and optimises colour compensation in four steps according to the environment. The Daylight View mode also provides white balance adjustment settings for both fluorescent and incandescent lamps to match the room lighting.

The Panasonic PT-LB20 Series with Daylight View

Conventional 2,000-lumen projectors

Colours turn whitish

The Daylight View Process



Controls on the top

Daylight View technology enables Panasonic projectors to achieve the same image performance as projectors a class above them, while consuming less power. This helps to save energy resources that would otherwise be wasted.

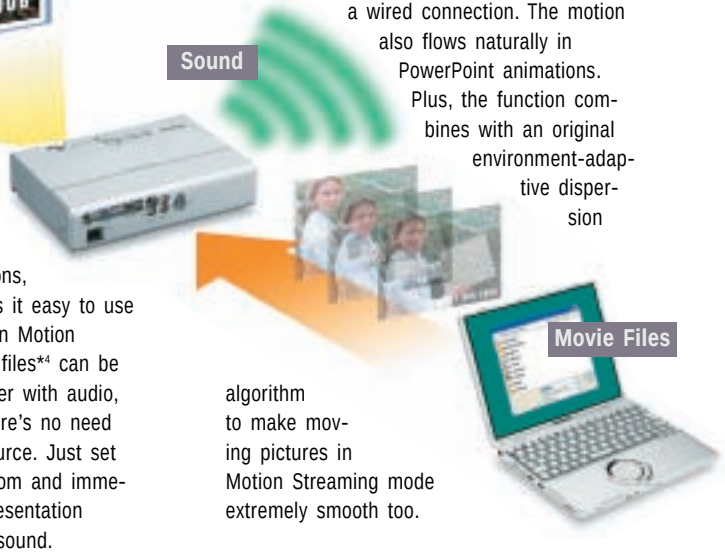
*1 In comparison with our product, under room lighting conditions of 400 lux, when projecting an 80-inch image (measured diagonally)
*2 The PT-LB20VEA with 1,600 lumens of brightness achieves a level of image performance comparable to projectors with 2,400 lumens of brightness.
*3 The Daylight View effect may vary depending on screen size, screen gain, and surrounding brightness.

Easy Wireless Projection (PT-LB20NTEA)

Set yourself free.

Wireless PC Motion/Sound Streaming

Wireless Manager Mobile Edition 2, an original application software for wireless presentations, is supplied. This software makes it easy to use a variety of wireless functions. In Motion Streaming mode, moving-image files*4 can be sent completely wireless, together with audio, from the hard disk of a PC. There's no need to connect an external video source. Just set up the PC somewhere in the room and immediately start into an effective presentation using both moving images and sound.



High-Speed Data Transfer

The IEEE 802.11b/g-compliant wireless LAN function enables high-speed data transfer.*5 In Live mode and Multi Live mode, the content of the PC screen is projected with the same smooth image motion as you get with a wired connection. The motion also flows naturally in PowerPoint animations. Plus, the function combines with an original environment-adaptive dispersion algorithm to make moving pictures in Motion Streaming mode extremely smooth too.

Simple, User-Friendly Settings

Wireless Manager Control Panel

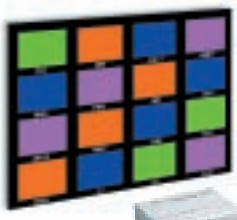
We have simplified the process for installing Wireless Manager ME 2 and setting up a PC for a wireless presentation. Just insert the CD-ROM into the PC, and many of the settings are made automatically. When the presentation is finished, Wireless Manager restores all PC settings to their original state, so the PC is ready to reconnect to your company LAN. When connection is not possible, a detailed error message is displayed to help solve the problem quickly.

Other Wireless Features

- Projector control/status monitoring capability via an Internet browser
- Automatic connection to registered projector units
- Follows the Advanced Encryption Standard (AES), which has been adopted as an official U.S. Government standard
- Wireless shutter function
- One-shot mode
- PowerPoint page up/down operation using the supplied remote control

Flexible 16-Window Index Style

In Multi Live mode, a single projector unit can receive data from multiple PCs and display their images simultaneously on its multi-window screen. The projection style can be selected from Four Window, Index and Extended Index. It is also possible to send images from a single PC to multiple projector units.*6



Extended Index Style:
16 Thumbnails
This style projects images from up to sixteen PCs as small windows. Using the projector's remote control, you can select any one of the index windows and display it on the main window or on a full screen.

Index Style:
Four Thumbnails
This style projects images from up to four PCs as small windows along the bottom of the screen.

Four-Window Style
The operation is controlled using Wireless Manager ME 2.

*4 Supports ASF, WMV, AVI, MPEG4 and MPEG1/2 movie formats. Copyright protection measures prevent wireless projection of DVD sources.
*5 The maximum data transfer speed is 30 frames per second (fps). This speed differs depending on the PC's performance and environment.
*6 Up to eight units.

By building the wireless function into the projector, we were able to eliminate the need for a wireless card and keep the appearance of the unit slimmer and neater.

Quick Operation

2-Second Speed Start
Speed Start slashes the time it takes to get your presentation under way. The image appears within two seconds after you press the power button. Behind this breakthrough is Panasonic's high-precision lamp and lamp power supply—an advantage made possible by our advanced production technology.

One-Touch Auto Setup with Digital Keystone Correction
This function assures quick and easy setup. The projector handles the basic image adjustments, from phasing to vertical and horizontal position. The built-in gravity sensor detects the projector's angle relative to the floor and corrects for vertical keystone distortion accordingly.

Direct Power Off
When the presentation is completed, Direct Power Off lets you disconnect the power cable and move the projector right away*7 because the cooling fan keeps operating until the lamp is cooled.

Portability

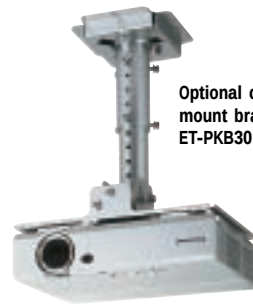
Compact Notebook-Size Body
PT-LB20 models are 297 mm wide by 210 mm deep—about the size of an A4 sheet of paper—and only 65 mm high. Each slips easily into a bag or briefcase. The

compact size makes these models highly mobile and minimises the space required for presentations or storage.

Ultra-Lightweight: 2.1 kg (4.6 lbs)
At only 2.1 kg*8, PT-LB20 models won't weigh you down—even when you're toting along a notebook PC as well. Convenient size and weight are just two reasons why the PT-LB20 series is the logical choice for mobile presentations.

More Valuable Features

- Short-throw zoom lens
- Anti-theft features: User password, control panel lock and text superimposing
- Projector AI
- Index Window
- Auto power off
- Two RGB inputs
- RGB 2 IN can be switched to RGB 1 OUT for loop-through monitoring
- Auto Search
- Automatic input signal detector
- HDTV compatibility
- Full compatibility with sRGB colour space for accurate colour reproduction (in natural mode)
- Picture mode selection (standard/dynamic/natural)
- Blackboard mode allows you to project images onto an ordinary classroom or conference room blackboard
- 3x digital zoom
- Freeze
- Shutter function for image/sound muting
- Selectable 17-language on-screen menu (English, French, German, Spanish, Italian, Korean, Russian, Chinese, Japanese, Swedish, Norwegian, Danish, Portuguese, Polish, Hungarian, Czech, Thai)
- Discrete S-Video and video inputs allow connection of two DVD/video sources at a time
- Ceiling mountable (option)
- Lamp power high/low selection
- Temperature warning indication
- Lamp replacement warning indication



Optional ceiling mount bracket: ET-PKB30

PT-LB20 Series Feature Comparison

	PT-**LB20NT**EA	PT-**LB20**EA	PT-**LB20**SEA	PT-**LB20**VEA
Brightness	2,000 lumens	2,000 lumens	2,000 lumens	1,600 lumens
Native resolution (max.)	XGA (UXGA)	XGA (UXGA)	SVGA (UXGA)	XGA (UXGA)
Daylight View	Yes	Yes	Yes	Yes
Throw distance	1.1–10.7 m	1.1–10.7 m	1.1–11.0 m	1.4–12.7 m
2-Second speed start	Yes	Yes	Yes	Yes
One-touch auto setup	Yes	Yes	Yes	Yes
Direct power off	Yes	Yes	Yes	Yes
Blackboard mode	Yes	Yes	Yes	No
Notebook-size compact body (297 x 65 x 210 mm)	Yes	Yes	Yes	Yes
Weight	2.2 kg	2.1 kg	2.1 kg	2.1 kg
Wireless presentation capability	Yes	No	No	No

Ecology-Conscious Design

Panasonic meticulously works to minimise environmental impact in the product design, production and delivery processes, and in the performance of the product itself over its life cycle. The PT-LB20 Series reflects the following ecological considerations.

- **Lead-free solder is used to mount components to the printed circuit boards.**
- **No halogenated flame retardants are used in the cabinet.**
- **No styrofoam is used in the packing materials.**
- **Lead-free glass is used for the lens.**
- **The packing case and operating manual are made from recycled paper.**

***7 The projector cannot be placed into a bag until the cooling fan stops operating.**
***8 PT-LB20NTEA: 2.2 kg/4.9 lbs**

Rear View

Introducing Innovative Daylight View Projectors

Daylight View

Set yourself free.

Wireless Motion/Sound Streaming

PT-**LB20NT**EA
WIRELESS XGA Projector
2000 lm

WIRELESS

Vivid Presentations Anywhere

PT-**LB20**EA
MOBILE XGA Projector
2000 lm

Daylight View

PT-**LB20S**EA
MOBILE SVGA Projector
2000 lm

Daylight View

PT-**LB20V**EA
MOBILE XGA Projector
1600 lm

Daylight View

Specifications

Power supply	100–240 V AC, 50/60 Hz
Power consumption	220 W (Approx. 4 W in standby mode with fan stopped)
Amps	2.5 A–1.3 A
LCD panel	4:3 aspect ratio, micro lens array
Panel size	
PT-LB20NTEA/LB20EA/LB20SEA	0.7″ (17.78 mm) diagonal
PT-LB20VEA	0.6″ (15.24 mm) diagonal
Display method	Transparent LCD panel (x 3, R/G/B)
Drive method	Active matrix
Pixels	
PT-LB20NTEA/LB20EA/LB20VEA	786,432 (1,024 x 768) x 3, total of 2,359,296 pixels
PT-LB20SEA	480,000 (800 x 600) x 3, total of 1,440,000 pixels
Pixel configuration	Stripe
Lens	Manual zoom (1:1–1:1.2), manual focus
PT-LB20NTEA/LB20EA/LB20VEA	F 1.7–1.9, f 21.5–25.8 mm
PT-LB20SEA	F 1.8–2.1, f 22.0–26.2 mm
Lamp	155 W UHM™ lamp
Colours	Full colour (16,777,216 colours)
Brightness	
PT-LB20NTEA/LB20EA/LB20SEA	2000 lumens
PT-LB20VEA	1600 lumens
Uniformity	90%
Contrast	400:1*1 (full on/full off)
Scanning frequency	
RGB	Horizontal: 15–91 kHz, Vertical: 50–85 Hz
$Y P_B P_R$	480i (525i): fH 15.75 kHz; fv 60 Hz 576i (625i): fH 15.63 kHz; fv 50 Hz 480p (525p): fH 31.5 kHz; fv 60 Hz 576p (625p): fH 31.25 kHz; fv 50 Hz 720p (750p): fH 45 kHz; fv 60 Hz 1080i (1125i): fH 33.75 kHz; fv 60 Hz 1080i (1125i): fH 28.125 kHz; fv 50 Hz
S-Video/Video	NTSC, NTSC4.43, PAL-M, PAL60: fH 15.75 kHz; fv 60 Hz PAL, SECAM, PAL-N: fH 15.63 kHz; fv 50 Hz
Projection size	838–7,620 mm/33–300 inches diagonally
Throw distance	
PT-LB20NTEA/LB20EA	1.1 m–10.7 m (3′7″–35′1″)
PT-LB20SEA	1.1 m–11.0 m (3′7″–36′1″)
PT-LB20VEA	1.4 m–12.7 m (4′7″–41′8″)
Optical axis shift	
PT-LB20NTEA/LB20EA/LB20SEA	6:1 (fixed)
PT-LB20VEA	12:1 (fixed)
Keystone correction range	Vertical: approx. ±30°
On-screen menu	17 languages: English, French, German, Spanish, Italian, Korean, Russian, Chinese, Japanese, Swedish, Norwegian, Danish, Portuguese, Polish, Hungarian, Czech, Thai
Installation	Front/rear ceiling/desk (menu selection)
Built-in speakers	1.0 W (monaural) output power
Terminals	
RGB1 IN	D-sub HD 15-pin x 1
RGB signal	R, G, B: 0.7 Vp-p, 75 ohms, Sync on green: 1.0 Vp-p, 75 ohms HD/SYNC, VD: TTL (positive/negative polarity compatible)
$Y P_B P_R$ signal	Y: 1.0 Vp-p (including sync signal), 75 ohms; PB, PR: 0.7 Vp-p, 75 ohms
RGB2 IN/RGB1 OUT	D-sub HD 15-pin x 1 (input/output selectable using on-screen menu)
RGB signal	R, G, B: 0.7 Vp-p, 75 ohms, Sync on green: 1.0 Vp-p, 75 ohms HD/SYNC, VD: TTL (positive/negative polarity compatible)
$Y P_B P_R$ signal	Y: 1.0 Vp-p (including sync signal), 75 ohms; PB, PR: 0.7 Vp-p, 75 ohms
VIDEO IN	RCA pin x 1, 1.0 Vp-p, 75 ohms
S-VIDEO IN	Mini DIN 4-pin x 1, Y: 1.0 Vp-p, C: 0.286 Vp-p, 75 ohms
AUDIO IN	RCA (L, R) x 1, 0.5 Vrms (for RGB/VIDEO/S-VIDEO)
SERIAL	Mini DIN 8-pin x 1 (RS-232C)
Power cord length	2 m (6′7″)
Cabinet material	Moulded material (ABS/PC)
Dimensions (W x H x D)	297 x 65 x 210 mm (11-11/16″ x 2-9/16″ x 8-1/4″)*2
Weight PT-LB20NTEA	2.2 kg (4.9 lbs.)
PT-LB20EA/LB20VEA/LB20SEA	2.1 kg (4.6 lbs.)
Operating environment	
Temperature	0°–40°C (32°–104°F)
Humidity	20%–80% (no condensation)
Remote Control Unit	
Power supply	3 V DC (button battery x 1)
Operation range*3	Approx. 7 m (23 feet) when operated from directly in front of the signal receptor
Dimensions (W x H x D)	40 x 86 x 6.5 mm (1-9/16″ x 3-3/8″ x 1/4″)
Weight	18 g (0.6 oz.) (including battery)
Wireless LAN (PT-LB20NTEA)	
Standard	IEEE802.11b/g
Modulation	
IEEE802.11b	Direct sequence spread spectrum (DS-SS) system
IEEE802.11g	Orthogonal frequency division multiplex (OFDM) system
Transmission system	
IEEE802.11b	CCK (11/5.5 Mbps), DQPSK (2 Mbps), DBPSK (1 Mbps)
IEEE802.11g	64-QAM (54/48 Mbps), 16-QAM (36/24 Mbps), QPSK (18/12 Mbps), DPSK (9/6 Mbps)
Transmission speed	
IEEE 802.11b	11 Mbps, 5.5 Mbps, 2 Mbps, 1 Mbps
IEEE 802.11g	54 Mbps, 48 Mbps, 36 Mbps, 24 Mbps, 18 Mbps, 12 Mbps, 9 Mbps, 6 Mbps
Operation range*3	Approx. 30 m
Frequency range	2,412 MHz–2,472 MHz
Channels	1–13 ch

Supplied Accessories

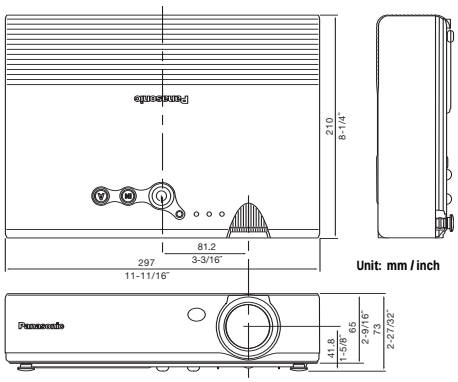
- Card remote control
- Lithium battery for remote control
- Power cord
- RGB signal cable
- Carrying bag
- Software CD-ROM (PT-LB20NTEA)

Optional Accessories

ET-LAB10	Replacement lamp unit
ET-PKB30	Ceiling mount bracket
ET-RM300	Full-function wireless remote control
ET-ADSER	Serial adaptor (DIN 8-pin/D-sub 9-pin)

*1: In AI mode.
*2: Height including protruding parts and legs: 73 mm (2-27/32″).
*3: Operation range differs depending on the environment.

Dimensions



To use wireless functions, a PC is required that meets the conditions given below:

OS:	**Windows XP Home Edition, Windows XP Professional, Windows 2000 Professional, Windows Me (Millennium Edition) or Windows 98SE (Second Edition)**
CPU:	**Pentium III or higher, or other compatible processor (800 MHz or higher recommended when using the live mode; 1 GHz or higher is recommended when playing movies).**
Memory:	**128 MB or more (256 MB or more for Windows XP or Windows 2000)**
Free hard disk space:	**60 MB or more**
Hardware conditions:	**CD-ROM drive (for software installation and viewing the user's manual). An 802.11b/g built-in wireless LAN system or external 802.11b/g LAN card must be installed and running normally. However, some 802.11g/b wireless LAN may not allow connection to 802.11g projectors. The data transfer speed will be lower with an 802.11b LAN than that with an 802.11g LAN.**
Web browser:	**Internet Explorer 6.0 or later, Netscape Communicator 7.0 or later**
Direct X:	**DirectX® 8.1b or later must be installed.**

Operation is not guaranteed for all computers that meet the above conditions.

NOTES ON USE

- The projector uses a high-voltage mercury lamp that contains high internal pressure. This lamp may break, emitting a large sound, or fail to illuminate, due to impact or extended use. The length of time that it takes for the lamp to break or fail to illuminate varies greatly depending on individual lamp characteristics and usage conditions.
- The brightness of the lamp will gradually decrease with use.
- The lamp, LCD panel, polarizing plate, and polarizing beam splitter (PBS) are consumable parts. These parts may need to be replaced during the guarantee period if the projector is used for six or more hours per day.
- The replacement cycle of the LCD panel, polarizing plate, and polarizing beam splitter (PBS) will be shortened if the projector is subjected to continuous use for six or more hours. Likewise, the replacement cycle of the lamp will be shortened if the power is frequently turned on and off or the projector is subjected to continuous use for 10 or more hours.
- Interruptions may occur in the wireless connection due to signal interference or PC conditions.

Projection Distance

PT-LB20NTEA/LB20EA

Diagonal image size (4:3 aspect ratio)	Distance to screen min.	Distance to screen max.	Height from the edge of screen to centre of lens
33″/ 0.84 m / 2.7′	–	1.1 m / 3.6′	8 cm / 3.1″
40″/ 1.02 m / 3.3′	1.2 m / 3.9′	1.4 m / 4.6′	9 cm / 3.5″
50″/ 1.27 m / 4.2′	1.5 m / 4.9′	1.7 m / 5.6′	11 cm / 4.3″
60″/ 1.52 m / 4.9′	1.8 m / 5.9′	2.1 m / 6.9′	14 cm / 5.5″
70″/ 1.78 m / 5.8′	2.1 m / 6.9′	2.4 m / 7.9′	16 cm / 6.3″
80″/ 2.03 m / 6.7′	2.4 m / 7.9′	2.8 m / 9.2′	18 cm / 7.1″
90″/ 2.29 m / 7.5′	2.7 m / 8.9′	3.2 m / 10.5′	20 cm / 7.9″
100″/ 2.54 m / 8.3′	3.0 m / 9.8′	3.5 m / 11.5′	22 cm / 8.7″
120″/ 3.05 m / 10.0′	3.6 m / 12.5′	4.2 m / 13.8′	26 cm / 10.2″
150″/ 3.81 m / 12.5′	4.5 m / 14.8′	5.3 m / 17.4′	33 cm / 13.0″
200″/ 5.08 m / 16.7′	6.0 m / 19.7′	7.1 m / 23.3′	44 cm / 17.3″
250″/ 6.35 m / 20.8′	7.5 m / 24.6′	8.9 m / 29.2′	55 cm / 21.7″
300″/ 7.62 m / 25.0′	9.0 m / 29.5′	10.7 m / 35.1′	66 cm / 26.0″

PT-LB20SEA

Diagonal image size (4:3 aspect ratio)	Distance to screen min.	Distance to screen max.	Height from the edge of screen to centre of lens
33″/ 0.84 m / 2.7′	–	1.1 m / 3.6′	8 cm / 3.1″
40″/ 1.02 m / 3.3′	1.2 m / 3.9′	1.4 m / 4.6′	9 cm / 3.5″
50″/ 1.27 m / 4.2′	1.5 m / 4.9′	1.8 m / 5.9′	11 cm / 4.3″
60″/ 1.52 m / 4.9′	1.8 m / 5.9′	2.1 m / 6.9′	14 cm / 5.5″
70″/ 1.78 m / 5.8′	2.1 m / 6.9′	2.5 m / 8.3′	16 cm / 6.3″
80″/ 2.03 m / 6.7′	2.4 m / 7.9′	2.9 m / 9.5′	18 cm / 7.1″
90″/ 2.29 m / 7.5′	2.8 m / 9.2′	3.2 m / 10.5′	20 cm / 7.9″
100″/ 2.54 m / 8.3′	3.0 m / 9.8′	3.6 m / 11.8′	22 cm / 8.7″
120″/ 3.05 m / 10.0′	3.7 m / 12.1′	4.3 m / 14.1′	26 cm / 10.2″
150″/ 3.81 m / 12.5′	4.6 m / 15.1′	5.4 m / 17.7′	33 cm / 13.0″
200″/ 5.08 m / 16.7′	6.1 m / 20.0′	7.3 m / 24.0′	44 cm / 17.3″
250″/ 6.35 m / 20.8′	7.6 m / 24.9′	9.1 m / 29.9′	55 cm / 21.7″
300″/ 7.62 m / 25.0′	9.2 m / 30.2′	11.0 m / 36.1′	66 cm / 26.0″

PT-LB20VEA

Diagonal image size (4:3 aspect ratio)	Distance to screen min.	Distance to screen max.	Height from the edge of screen to centre of lens
33″/ 0.84 m / 2.7′	–	1.4 m / 4.6′	4 cm / 1.6″
40″/ 1.02 m / 3.3′	1.4 m / 4.6′	1.7 m / 5.6′	5 cm / 2.0″
50″/ 1.27 m / 4.2′	1.7 m / 5.6′	2.1 m / 6.9′	6 cm / 2.4″
60″/ 1.52 m / 4.9′	2.1 m / 6.9′	2.5 m / 8.2′	7 cm / 2.8″
70″/ 1.78 m / 5.8′	2.4 m / 7.9′	2.9 m / 9.5′	8 cm / 3.1″
80″/ 2.03 m / 6.7′	2.8 m / 9.2′	3.4 m / 11.2′	9 cm / 3.5″
90″/ 2.29 m / 7.5′	3.1 m / 10.2′	3.8 m / 12.5′	11 cm / 4.3″
100″/ 2.54 m / 8.3′	3.5 m / 11.5′	4.2 m / 13.8′	12 cm / 4.7″
120″/ 3.05 m / 10.0′	4.2 m / 13.8′	5.0 m / 16.4′	14 cm / 5.5″
150″/ 3.81 m / 12.5′	5.2 m / 17.0′	6.3 m / 20.7′	18 cm / 7.1″
200″/ 5.08 m / 16.7′	7.0 m / 22.9′	8.4 m / 27.6′	23 cm / 9.1″
250″/ 6.35 m / 20.8′	8.7 m / 28.5′	10.6 m / 34.8′	29 cm / 11.4″
300″/ 7.62 m / 25.0′	10.5 m / 34.4′	12.7 m / 41.7′	35 cm / 13.8″

Panasonic

Weights and dimensions shown are approximate. Specifications are subject to change without notice. Product availability differs depending on region and country. This product may be subject to export control regulations. UHM is a trademark of Matsushita Electric Industrial Co., Ltd. VGA and XGA are trademarks of International Business Machines Corporation. Windows and PowerPoint are either registered trademarks or trademarks of Microsoft Corporation in the United States and/or other countries. All other trademarks are the property of their respective trademark owners. Projection images simulated.

ISO 9001 JQA-1617

JAB EMS Accreditation RE 009

ISO 14001 JACO JAPAN AUDIT AND CERTIFICATION ORGANIZATION FOR ENVIRONMENT AND QUALITY

UKAS ENVIRONMENTAL MANAGEMENT 051

PT-LB20EA1-05MAR50K Printed in Japan.